



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/032,973 | 10/24/2001 | Thomas Brinz | 10191/2064 | 8723 |
| 26646 | 7590 | 11/06/2003 | EXAMINER | |
| KENYON & KENYON ONE BROADWAY NEW YORK, NY 10004 | | | DEJESUS, LYDIA M | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2859 | |

DATE MAILED: 11/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/032,973

Applicant(s)

BRINZ, THOMAS

Examiner

Lydia M. De Jesús

Art Unit

2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 16-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 16-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☒ Other: Translation JP 09325165 A

DETAILED ACTION

Response to Amendment

1. Applicant's arguments, see Paper No. 10, filed October 3, 2002, with respect to the rejection(s) of claim(s) 1-14 and 16-22 relying upon the references of Ladewski, Long, and Han in view of Pylkki have been fully considered and are persuasive. Therefore, these rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of JP 09325165.

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-2, 6-8, 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09325165 A [hereinafter Oji] in view of Gallmeyer et al. [U.S. Patent 6,957,083, hereinafter Gallmeyer].

Oji discloses a device, shown in Figure 1, for testing a material [5] that changes shape when an electric field is applied, comprising: a generator [4] for generating the electric field and applying the electric field to the material [3] to produce a change in shape; and a measurement unit [5+6+7+8] for measuring a change in shape of the material after the at least one of the electric field and the magnetic field is applied. Said measurement unit includes an optical measurement unit for measuring a change in length of the material.

Said material includes a piezoactive material. In this case, the device is for testing the piezoelectric constant of the material. Oji further discloses a unit for varying the electric field generated by the generator, said unit periodically varying the electric field as a sinusoidal change (see Paragraphs 36 and 42 of the Machine translation of Oji).

The material is arranged on a substrate (see paragraphs 10-15 of the Machine translation of Oji). Oji further discloses a test arrangement wherein at least two different test areas are provided on the substrate, the at least two different test areas including different materials (see Figure 5 and Paragraphs 13 and 20-21 of the Machine translation of Oji).

With respect to the limitations in claim 1: Oji fails to disclose at least one thermal sensor for detecting a change in temperature of the material associated with the electric field. However, Gallmeyer teaches that it is very well known that temperature affects the performance of a piezoelectric material i.e., operating a piezoelectric device at low temperature suppresses a change in shape of the piezoelectric material, requiring the application of a higher electric field

than the normal operating range (see lines 12-22 of column 3). Gallmeyer further teaches providing a thermal sensor [22] to the piezoelectric device to compensate for the ambient temperature when controlling the electric field applied to the piezoelectric device.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add a thermal sensor to monitor changes in temperature associated with the electric field in the test device disclosed by Oji, as suggested by Gallmeyer, in order to further test the effect of temperature variations on the behavior of the material tested by the device.

5. Claim 5, 9, 11-12, 18, 20 and 22 rejected under 35 U.S.C. 103(a) as being unpatentable over Oji in view of Gallmeyer as applied to claims 1-2, 6-8, 16 and 19 above, and further in view of JP 03122544 A [hereinafter Shimizu].

Oji and Gallmeyer together disclose a test device as claimed, as stated above in paragraph 4. However, Oji and Gallmeyer fail to disclose an arrangement for performing a temperature control of the substrate and fail to disclose the imaging unit as a unit obtaining an image of the material i.e., as a camera.

Shimizu teaches that it is very well known in the art to measure the stress of a film of a thin film material an optional temperature by accommodating a plurality of samples within a container/chamber capable of controlling the temperature and ambience/climate inside, and measuring the amount of warp based on the interference effect of laser beams. The test device shown by Shimizu includes a temperature control arrangement Similar to the arrangement of Oji, the deflection of the thin film material is determined by measuring the radiation reflected by the

Art Unit: 2859

material, in this an image of the material is recorded by a camera [10]. The sample [4] is placed on an optical flat/substrate [5].

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to additionally measure the effect of temperature variations on the piezoelectric characteristics of a material with test device of the combination of Oji and Gallmeyer, as suggested by Gallmeyer, by enclosing the material in a temperature controlled chamber, as taught by Shimizu, in order to increase the accuracy of the measurement data.

Moreover, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace optical detector of the test device of Oji for a camera, as taught by Shimizu, since these are both alternate optical detector configurations that will perform the same function, if one is replaced by the other, of providing a signal to the computer [8] of Oji representing the change in shape of the material and further since the optical detector of Shimizu will allow a more accurate determination of the change in dimensions of the material by capturing and recording a two-dimensional image of the material.

It is considered that the test device resulting from the combination of Oji, Gallmeyer and Shimizu will include an analyzer [computer 8 of Oji] configured to determine the change in shape or size of the material based on the image captured by the camera.

Furthermore, with respect to claims 11 and 12: Since the application of an electric field to the material will inherently induce a heating of the material, then it is considered that within the climate controlled chamber, the thermal sensor serves as a detection unit for detecting the portion of the heating of the material attributed to an electric current associated with the electric field and

Art Unit: 2859

the analyzer unit will function to compensate a temperature increase in the material detected by the thermal sensor with the portion of the heating of the material attributed to the electric current.

6. Claims 3, 4 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oji and Gallmeyer as applied to claims 1-2, 6-8, 16 and 19 above, and further in view of Cardella.

Oji and Gallmeyer together disclose a test device as claimed, as stated above in paragraph 4, but Gallmeyer fails to disclose a particular temperature sensor configuration.

However, Cardella teaches that it is very well known select among a number of well known temperature detector configurations, such as infrared temperature detectors and non-optical temperature detectors i.e. thermocouples or thermistors, for a thermal sensor in a temperature control system.

Therefore, at the time the invention was made, the selection of a particular temperature sensor configuration among those well known in the art for the thermal sensor in the test device of the combination of Oji and Gallmeyer, absent any criticality, is considered to be a matter of design choice, since, as taught by Cardella, any of these configurations will perform the same function, if one is replaced by the other, of generating a signal corresponding to a temperature.

7. Claims 10, 13-14, 21 rejected under 35 U.S.C. 103(a) as being unpatentable over Oji, Gallmeyer and Shimizu, as applied to claims 5, 9, 11-12, 18, 20 and 22, further in view of Martin et al. [U.S. Patent 6,297,579 B1, hereinafter Martin].

Oji, Gallmeyer and Shimizu together disclose a test device as claimed, as discussed in paragraph 5, but fail to explicitly show an electric contacting arranged on the material and to disclose a plurality of test areas arranged in a grid pattern on the substrate.

Martin shows a method of calibrating the response of the shape of a sheet of electroactive material having a plurality of electrodes attached to the front side of the sheet and having a conductive substrate attached to the backside of the sheet (see claim 35). Martin shows for example in figure 7, an array of piezoelectric patches [30] including at least two different materials (see lines 51 of column 8 through line 46 of column 9) are attached to a conductive substrate [26], an electrode/electric contacting [14] (see lines 62-64 of column 6) attached to the front side of each piezoelectric patch [30] by depositing processes well known in the semiconductor industry, electroplating or by painting conductive paint by hand (see lines 1-3 of column 7). The method includes the steps of applying a voltage to a selected electrode; measuring the deformation of the sheet at the location of the selected electrode, repeating these two steps for all the electrodes; and assembling a global sensitivity matrix from the measured deformations, which relates the deformed shape of the sheet to the set of voltages applied to the electrodes. The sheet further comprises a layer of gold [28] sputtered onto the substrate [26].

Moreover, figure 18 shows the experimental results plotting the deflection of a sheet as a function of the applied voltage, according to various electron energies. However, Martin does not particularly show the system selected for performing calibration measurements of said array.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the device resulting from the combination of Oji, Gallmeyer and Shimizu for performing the calibration measurements for the array shown by Martin, since the structural features of said device are considered to perform the functions required by the steps of said method.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hansen discloses a readout system for dilatometers. Berg discloses an apparatus for measuring coefficient of thermal expansion. Dujari et al. discloses a circuit card assembly having controlled expansion properties. Weiss discloses a strain-optic voltage monitor. Ottoson et al. discloses a method for evaluating piezoelectric materials. Taylor discloses a fiber optic magnetic field sensor. Ehrle discloses a device for making non-contacting measurements of electric fields which are static or varying in time. Foreign Patent documents JP2001264373 A, JP01012587A, JP 07077552 A, and JP04366744 A disclose related devices.

9. Since Applicant's arguments with respect to the rejections presented in the last office action are persuasive, the finality of said Office action has been withdrawn.

However, since the amendment filed by Applicant in Paper No. 7 changes in the scope of independent claim 1, by adding the features recited previously in claim 15, and moreover changes the limitations included in the dependent claims, it is considered that the amendment filed by Applicant on May 8, 2003 necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lydia M. De Jesús whose telephone number is (703) 306-5982. The examiner can normally be reached on 7:30 to 4:00 p.m., Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F.F. Gutierrez can be reached on (703) 308-3875. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

LDJ
October 31, 2003



CHRISTOPHER W. FULTON
PRIMARY EXAMINER